

REMARKS:

Claims 1 –11, 13 and 17-20 are pending and stand rejected.

Claims 5, 6, 9 and 13 stand objected to.

Claim 1 was amended to add a solubility limitation. This amendment is supported by original disclosure at page 1, line 15 of the Substitute Specification.

Claims 3 have been amended to include both number average and weight average molecular masses. This amendment is supported on page 6, line 3; and page 13, line 14 of the original specification. in which steric exclusion chromatography is used to measure Mn, Mw, and polydispersity.

Claims 6, 9, and 13 have been amended, as suggested by the Examiner.

New claim 21 has been added to claim a paint, adhesive, glue or cosmetic formulation which is aqueous-based. This claim is supported by original disclosure at page 10, lines 6-11 of the Substitute Specification.

It is believed that no new matter has been added by the amendments.

35 U.S.C. §112

Claim 3 stands rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. Specifically, it is unclear hat “an average masses” means. Claim 3 has been amended to make it more clear that both the Mn and Mw “average masses” are included in the 500 g/mol to 1,000,000 g/mol limitation. Steric exclusion chromatography is used to measure Mn, Mw, and polydispersity.

Claim Objections

Claim 5, 6, 9, and 13 stand objected to. Specifically:

- a) Claim 5 includes the phrase “such as”. The phrase “such as” had been removed from the claims in the Preliminary amendment submitted by Applicant with the filing of the present application, and therefore the objection is mute.
- b) Claim 6: Applicant has amended claim 6 to add a comma, as suggested by the Examiner.

- c) Claim 9, line 2, the word “advantageously” has been deleted.
- d) Claim 13, has been amended as suggested by the Examiner. It is noted that the amendment of Claim 13 is unnecessary, since the Claim as previously presented correctly uses the term “comprising” – as “comprising” is correctly used in both directions, and thus a “copolymer comprising a paint”, or a “paint comprising a copolymer” both correctly refer to a paint that has a copolymer as one of its elements. Applicant has acquiesced to the Examiner’s proposal for ease of prosecution, and only because the creation of the new independent claim did not put the number of independent claims over three, and because the Examiner did not propose restricting out this new independent claim.

35 U.S.C. §103(a)

Claims 1-11, 13 and 17-20 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Nesvadba et al. (U.S. Patent 6,262,206). The ‘206 reference fails to teach or suggest all of Applicant’s claim limitations, and thus fails to present a *prima facie* case of obviousness. Specifically, the Nesvadba reference fails to teach or suggest Applicant’s specifically claimed combination of a gradient copolymer, a monomer at over 50% having a Tg less than 20°C, a monomer at less than 50% of the copolymer having a Tg of greater than 20°C, and where at least one monomer representing over 5% of the copolymer is hydrophilic.

The Nesvada reference is a general reference for using nitroso or nitron compounds to form polymers having a narrow polydispersity. Each of the individual elements and limitations of Applicant’s invention can be found buried among many other elements and limitations in the ‘206 reference. The structures listed include homopolymers, random copolymers, block, star and gradient copolymers (Col. 12, lines 56-58). The polymers can be made from a wide array of ethylenically unsaturated monomers, including some that would produce homopolymers with Tgs of both below and above 20°C. Some of the monomers are hydrophilic. The listed monomers also include comonomers of acrylic acid and methacrylic acid (Col. 7, lines 25 and 27), as well as maleic anhydride, itaconic acid and fumaric acid (Col 7, lines 36-38). Example B15 of the ‘206 reference even shows a block (not gradient) polymer of butyl acrylate and acrylic acid. However, Applicant’s unique COMBINATION of claim elements and limitations is not taught or suggested by the ‘206 reference.

Every element of a claimed invention may often be found in the prior art. However, identification in the prior art of each individual part claimed is insufficient to defeat patentability of the whole claimed invention. Rather, to establish obviousness based on a combination of the elements disclosed in the prior art, there must be some motivation, suggestion or teaching of the desirability of making the specific combination that was made by applicant. *In re Kotzab*, 55 U.S.P. Q.2d 1313, 1316 (Fed. Cir. 2000)(citations omitted).

Applicant contends that the obviousness rejection in this case is a classic example of hindsight, in effect using Applicant's claims as a template on which selected bits of the prior art teachings can be assembled. This is not a proper basis for rejection of claims. "One cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention." *In re Fine*, 5 U.S.P.Q. 1596, 1600 (Fed. Cir. 1988).

Applicant's invention is in effect a selection invention of some elements that can be found in the '206 reference, though not bound by all the '206 limitations.

Applicant's invention relates to the field of amphiphilic gradient copolymers that are soluble in water as well as in organic solvents. (Specification, page 1, lines 13-15). Since the solubility of a copolymer in water and solvent was not recognized as a result to achieve in the '206 patent, the composition could not be optimized through routine experimentation to obtain such a result. The Examiner contends that the weight ratio of Components A and B is a result effective variable that can be optimized by one of skill in the art. Applicant disagrees. While the ratio of A to B can certainly be varied, there is no teaching or suggestion in the '206 reference to obtain a gradient copolymer with solubility in both water and organic solvents. Thus there is no motivation in the '206 patent to optimize the composition to obtain Applicant's results.

Summary:

1. Applicant's claimed combination involves the combination of the following key elements -- said combination not being taught or suggested by the '206:

- a) a gradient polymer;
- b) more than 50% of at least one monomer having a Tg of less than 20°C (for the homopolymer);
- c) less than 50% of at least one monomer having a Tg of over 20°C (for the homopolymer);

- d) at least one of the monomers is hydrophilic and makes up at least 5% of the copolymer.
2. There is no teaching of this combination of elements and limitations in the '206 reference. (Example B15 contains 3 of the 4 elements).
3. The '206 reference does not recognize the result of a gradient polymer composition having a solubility in both water and organic solvents. This solubility is related to both monomer ratio and monomer choice. Since the '206 reference did not recognize the result to be achieved, the variables could not be recognized as result effective for said result, and therefore cannot be optimized by routine experimentation. If the result is not recognized by the reference, no amount of experimentation can optimize for an unrecognized result.
4. The '206 reference teaches away from Applicant's claimed combination of elements.
- a) Gradient copolymers are mentioned once in a laundry list of possible physical structures (Col. 12, lines 56-58), yet there is no teaching or suggestion of how gradient polymers would be useful. All Examples are either homopolymers, or involve a complete polymerization of the first block prior to the start of the second block. Indeed, Col. 13, lines 10-14 states that "once the first monomer is consumed a second monomer can be added to form a second block in a second polymerization step." There is no teaching or suggestion that a gradient polymerization requires less cycle time and produces a copolymer having excellent properties similar to the pure blocks of the '206 reference. The '206 reference only teaches away from Applicant's combination of claim limitations.
 - b) c) there is no teaching or suggestion to require a soft/hard block with predominately a soft phase. The '206 reference does not even recognize advantage of a copolymer. Both homopolymers and copolymers are taught as being equally important. Random and block copolymers, and those with a variety of Tg combinations are also shown. There is nothing special taught or suggested by the '206 reference regarding Applicant's claimed combination of specific Tg monomers and specific ratios.
 - d) Hydrophilic monomers are mentioned in the '206 reference. However, many of the combinations – including all of those cited by the Examiner on page 4 of the Office action, are block copolymers not having any hydrophilic monomer. The copolymer combinations of the '206 reference teach away from Applicant's claims, and certainly do not teach or suggest anything special about Applicant's specific Combination of elements.

In view of the above, the Applicant believes that the reasons for rejection have been overcome, and the claims herein should be allowable to the Applicant. Accordingly, reconsideration and allowance are requested.

Respectfully submitted;



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